

WHAT IS CLAIMED IS:

1. A substrate device, comprising:  
thin film transistors provided above a substrate, each including a semiconductor layer; and  
capacitors formed above the thin film transistors, each of the capacitors comprising a first electrode electrically connected to a part of the semiconductor layer, a second electrode arranged to face the first electrode, and a dielectric film including a nitride film arranged between the first electrode and the second electrode; the nitride film having an aperture for hydrogenating the semiconductor layer.
2. The substrate device according to Claim 1, the aperture being formed vertically above the semiconductor layer.
3. The substrate device according to Claim 2, the aperture being formed vertically above a channel region of the semiconductor layer.
4. The substrate device according to Claim 1, the dielectric film having a laminated structure including a layer formed of the nitride film.
5. The substrate device according to Claim 4, a layer formed of an oxide film being included in the laminated structure.
6. The substrate device according to Claim 1, the plurality of thin film transistors being arranged above the substrate in array.
7. An electro-optical device, comprising:  
scanning lines extending above a substrate;  
data lines extending in a direction intersecting the scanning lines;  
thin film transistors formed to correspond to each intersection between the scanning lines and the data lines, each including a semiconductor layer;  
pixel electrodes provided to correspond to the thin film transistors; and  
storage capacitors formed above the thin film transistors, each of the storage capacitors comprising a first electrode electrically connected to a part of the semiconductor layer, a second electrode arranged to face the first electrode, and a dielectric film including a nitride film arranged between the first electrode and the second electrode, the nitride film having an aperture for hydrogenating the semiconductor layer.
8. The electro-optical device according to Claim 7, the apertures being formed within regions where the pixel electrodes are formed.
9. The electro-optical device according to Claim 7, the pixel electrodes and the thin film transistors being arranged in a matrix and the scanning lines are formed in stripes to

correspond to the matrix, the device further comprising capacitive lines of fixed potential formed parallel to the scanning lines, and the capacitive lines including the second electrodes.

10. The electro-optical device according to Claim 7, further comprising:  
 first contact holes that electrically connect the first electrodes to a part of the semiconductor layer; and  
 second contact holes that electrically connect the first electrodes to the pixel electrodes.

11. The electro-optical device according to Claim 7, the thin film transistors being a plurality of N-channel type thin film transistors arranged in array, and the thin film transistors being provided in pixels in an image display region above the substrate for switching the pixels.

12. The electro-optical device according to Claim 7, the data lines overlapping the apertures.

13. The electro-optical device according to Claim 7, the nitride films being formed on the front surfaces of pixel regions, and the apertures being formed at the edge of the pixel electrodes.

14. A method of manufacturing a substrate device, comprising:  
 forming thin film transistors above a substrate, each thin film transistor including a semiconductor layer;  
 forming first electrodes electrically coupled to a part of the semiconductor layer above the thin film transistors;  
 forming second electrodes to face the first electrodes;  
 forming dielectric films including a nitride film on the first electrodes or the second electrodes after forming the first electrodes or the second electrodes;  
 forming apertures for hydrogenating the semiconductor layer by patterning the nitride film; and  
 hydrogenating the semiconductor layer by introducing hydrogen into the semiconductor layer through the apertures.

15. An electronic apparatus, comprising:  
 scanning lines extending above a substrate;  
 data lines extending in a direction intersecting the scanning lines;  
 thin film transistors formed to correspond to each of intersections between the scanning lines and the data lines, each including a semiconductor layer;  
 pixel electrodes provided to correspond to the thin film transistors; and

storage capacitors formed above the thin film transistors, each of the storage capacitors comprising a first electrode electrically connected to a part of the semiconductor layer, a second electrode arranged to face the first electrode, and a dielectric film including a nitride film arranged between the first electrode and the second electrode, the nitride film having an aperture for hydrogenating the semiconductor layer.